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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,491	09/12/2003	Jia-Shyong Cheng	TOP 324	6351
7590 10/28/2005				
RABIN & BERDO, P.C. Suite 500 1101 14th Street, N.W. Washington, DC 20005			EXAMINER PARKER, KENNETH	
			ART UNIT 2871	PAPER NUMBER

DATE MAILED: 10/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

EJK

Office Action Summary

Application No.

10/660,491

Applicant(s)

CHENG ET AL.

Examiner

Kenneth A. Parker

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2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-9,16-21,34 and 35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-9,11-14,16-21,23,24,34 and 35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. 16/21/05
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claims 1, 4-9 and 11-13 are objected to because of the following informalities:

The language “wherein the color-filter units layer is formed above the transparent organic layer and wherein the double-organic layer comprises a plurality of color-filter units and a transparent organic layer,” refers to “the color-filter units” and “the transparent organic layer” prior to introducing them. It appears as though the first and second portions of this sentence are reversed. Appropriate correction is required.

Claim 4 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Here the claim contains a limitation that has been added to the independent claim.

Claims 1, 4-5, 11-14 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto et al JP200121915.

Okamoto et al discloses (shown in figures 1 and 6) a liquid crystal display with an integrated color filter, comprising an active matrix substrate with a plurality of switching elements (elements 2,4,6,7), an insulating layer 8 formed on the active matrix substrate

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1, a double-organic layer formed on the insulating layer 9 and 14; a plurality of pixel electrodes 18a formed on the double-organic layer, and electrically connected to the respective switching elements via a plurality of respective contact holes; a substrate 16 positioned a predetermined distance above the active matrix substrate, and a liquid crystal layer 21 between the two substrates; wherein the color-filter units layer (9 and 14) is formed above the transparent organic layer and wherein the double-organic layer comprises a plurality of color-filter units 14r, 14g, 14b and a transparent organic layer 9, and the thickness of the color-filter units is 1-1.5 (see rough translation page 5, 2nd paragraph). Lacking is the layer being approximately 1 (1.5 is viewed as beyond approximately) and the specific indication that the thickness is selected for reducing parasitic capacitance of the liquid crystal display without sacrificing light transmission. It has been judicially determined that overlapping ranges were at least obvious, and in the instant case, the obviousness is viewed as strong as 1-1.5 is substantially overlapped by "about 1". The thickness was a well known result effective variable as it was well known at the time that the thickness of a color filter needs to be thick to enable good saturation, but where it has a contact hole, thin to prevent the contact hole from getting to large. Therefore one of ordinary skill would have found reason, motivation and suggestion to limit the upper end of the range to about 1 to limit the size/slope of the contact hole as was well known. Regarding the limitation of the thickness is selected for reducing parasitic capacitance of the liquid crystal display without sacrificing light transmission, the reason is viewed as a product by process limitation, and as there would be no way the motivation (what was the desirable tradeoff), this limitation does

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not distinguish over the reference. Further, viewed as an argument that the sub range does something different, the tradeoffs are dependent upon the capacitive couplings and the OD of the selected filter materials, so that the range of about 1 does not have anything new happening, as, if an ideal tradeoff could be identified, it would be dependent upon the materials selected and the configuration of the pixel arrangement, and not the size alone. Therefore there cannot be a conclusion that something new happens in the portion of the range 1-1.5 that is about 1.

The reference shown regarding claim 4, the liquid crystal display with an integrated color filter as claimed in claim 1, wherein the transparent organic layer is formed above the color-filter units layer, as the limitation is in the independent claim and met by this claim accordingly.

The reference shown regarding claim 5. The liquid crystal display with an integrated color filter as claimed in claim 1, wherein the transparent organic layer is formed of polycarbonate or acrylic- resin. (acrylic is listed, see translation page 4)

The reference shown regarding claim 11 the color-filter units includes red, green and blue units (as disclosed, see translation page 1).

The reference shown regarding claim 12 wherein the pixel electrodes are made of indium tin oxide (as disclosed- translation page 1).

The reference shown regarding claim 13 wherein the contact holes pass through the insulating layer and the double-organic layer (as shown).

The reference shown regarding claim 14 an integrated color filter, comprising: a substrate; a plurality of switching elements 5 formed on the substrate in a matrix arrangement; an insulating layer 8 formed on the switching elements; a transparent organic layer 9 formed above the insulating layer; a plurality of color-filter units 14 formed above the transparent organic layer; and a plurality of pixel electrodes formed above the color-filter units, and electrically connected to the respective switching elements via a plurality of respective contact holes (as shown),

wherein the contact holes pass through the transparent organic layer, color-filter units and the insulating layer (as shown).

Not shown is the thickness of the color-filter units is approximately 1.0 μm , thereby reducing parasitic capacitance of the liquid crystal display without sacrificing light transmission. Lacking is the layer being approximately 1 (1.5 is viewed as beyond approximately) and the specific indication that the thickness is selected for reducing parasitic capacitance of the liquid crystal display without sacrificing light transmission. It has been judicially determined that overlapping ranges were at least obvious, and in the instant case, the obviousness is viewed as strong as 1-1.5 is substantially overlapped by "about 1". The thickness was a well known result effective variable as it was well

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known at the time that the thickness of a color filter needs to be thick to enable good saturation, but where it has a contact hole, thin to prevent the contact hole from getting to large. Therefore one of ordinary skill would have found reason, motivation and suggestion to limit the upper end of the range to about 1 to limit the size/slope of the contact hole as was well known. Regarding the limitation of the thickness is selected for reducing parasitic capacitance of the liquid crystal display without sacrificing light transmission, the reason is viewed as a product by process limitation, and as there would be no way the motivation (what was the desirable tradeoff), this limitation does not distinguish over the reference. Further, viewed as an argument that the sub range does something different, the tradeoffs are dependent upon the capacitive couplings and the OD of the selected filter materials, so that the range of about 1 does not have anything new happening, as, if an ideal tradeoff could be identified, it would be dependent upon the materials selected and the configuration of the pixel arrangement, and not the size alone. Therefore there cannot be a conclusion that something new happens in the portion of the range 1-1.5 that is about 1.

The reference as modified above covers claim 34 wherein the thickness of the color-filter units is less than 1.2 μm .

Claims 6-9, 16-21, 23-24 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto et al JP200121915 in view of Gu et al 6011274.

The reference shown regarding claim 16 a method of fabricating an integrated color filter, comprising: providing a substrate 1 (for the product to have the substrate 1, this step had to occur);

forming a plurality of switching elements on the substrate in a matrix arrangement (for the product to have the TFTs, this step had to occur);

forming an insulating layer 8 on the switching elements;

forming a transparent organic layer 9 on the switching elements , wherein the transparent organic layer has a first hole exposing a part of the surface of the insulating layer (as shown), ;

etching the insulating layer (however, not shown is the using the transparent organic layer as an etching mask; see teaching from Gu '274 below) to form a second hole in the insulating layer, wherein the second hole joins the first hole and exposes a part of the surface of the switching elements (as shown);

forming a plurality of color-filter units 14 r,g, b with a third hole on the transparent organic layer wherein the third hole forms a contact hole together with the first and the second holes to expose the part of the surface of the switching elements (as shown); and forming a plurality of pixel electrodes on the color-filter units, wherein the pixel

electrodes are electrically connected with the switching elements via the contact hole; wherein the thickness of the color-filter units is approximately 1.0 μm , thereby reducing parasitic capacitance of the liquid crystal display without sacrificing light transmission. Lacking is the layer being approximately 1 (1.5 is viewed as beyond approximately) and the specific indication that the thickness is selected for reducing

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parasitic capacitance of the liquid crystal display without sacrificing light transmission, and the use of the transparent organic layer as a mask as claimed above. It has been judicially determined that overlapping ranges were at least obvious, and in the instant case, the obviousness is viewed as strong as 1-1.5 is substantially overlapped by "about 1". The thickness was a well known result effective variable as it was well known at the time that the thickness of a color filter needs to be thick to enable good saturation, but where it has a contact hole, thin to prevent the contact hole from getting too large. Therefore one of ordinary skill would have found reason, motivation and suggestion to limit the upper end of the range to about 1 to limit the size/slope of the contact hole as was well known. Regarding the limitation of the thickness is selected for reducing parasitic capacitance of the liquid crystal display without sacrificing light transmission, the reason is viewed as a product by process limitation, and as there would be no way the motivation (what was the desirable tradeoff), this limitation does not distinguish over the reference. Further, viewed as an argument that the sub range does something different, the tradeoffs are dependent upon the capacitive couplings and the OD of the selected filter materials, so that the range of about 1 does not have anything new happening, as, if an ideal tradeoff could be identified, it would be dependent upon the materials selected and the configuration of the pixel arrangement, and not the size alone. Therefore there cannot be a conclusion that something new happens in the portion of the range 1-1.5 that is about 1.

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Gu teaches the use of the smoothing layer as a mask for patterning (column 7, lines 30-49), which would have been recognized by those of ordinary skill to have the advantage of saving an masking step and giving better alignment of the holes. Therefore one of ordinary skill would have found reason, motivation and suggestion to modify the disclosure of the primary reference for the benefit of saving a masking step and getting better alignment.

The reference shown regarding claim 17 the method of fabricating an integrated color filter as claimed in claim 16, wherein the transparent organic layer is made of polycarbonate or acrylic-resin (acrylic is listed, see translation page 4)

Lacking from the disclosure in relation to claim 6 and 18 is the light transmission of the transparent organic layer is above 90%. Gu describes the layer as "Substantially transparent" (col. 6, lines 26-35), and that "Fuji clear" (col. 7, lines 15-25) was a desirable material for the organic layer, showing the recognition that more transparency was preferable, and further it was well known that light absorbed was a problem and that layers should be transparent for brightness. Therefore one of ordinary skill would have found reason, motivation and suggestion to employ high transparency to one of ordinary skill, as it was indicated as desirable for the reason stated above.

Lacking from the disclosure in relation to claim 7 and 19 is the dielectric constant of the transparent organic layer is 2.6-3.6, and in relation to claim 9 and 21 the dielectric

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constant of the color-filter units is 3.5-5.0. Low dielectric (below 3) was well known for minimizing coupling between the pixel electrode and the driving lines (which minimizes crosstalk), and this is discussed by Gu in columns 4-5, with Gu explicitly indicating the dielectric constant is preferable below 3 (column 6, lines 58-64). Therefore it would one of ordinary skill would have found reason, motivation and suggestion to modify the primary reference to employ a dielectric below 3 for the benefits above.

Lacking from the disclosure in relation to claim 8, and 20, wherein the thickness of the transparent organic layer is 1.5-3.5.mu.m.

Thickness as claimed were conventional as evidenced by Gu and were further result effective variables between the well known desire to be as thin as possible and the well known need to be thick enough for there required function. As the selection of a result effective variable was considered obvious to one of ordinary skill, selection of this variable would not patentably distinguish over the reference.

The reference shows regarding claim 23 the method of fabricating an integrated color filter as claimed in claim 16, wherein the color-filter units includes red, green and blue units (as described in page 1 of the translation, 14r, 14g and 14b).

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The reference shows regarding claim 24 the method of fabricating an integrated color filter as claimed in claim 16, wherein the pixel electrodes are made of indium tin oxide (page 1 of the translation)

The reference as modified above covers claim 35 wherein the thickness of the color-filter units is less than 1.2 μm .

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Zhong et al 6365916 shows an opening between color filter elements over signal lines.

Yamamoto et al 6445432 shows a color filter over a smoothing layer.

Ha 6697138 has a color filter substantially over a smoothing layer with openings that appear to be over the edges.

The finality of the previous office action is withdrawn, and this final action is sent out in its place. Accordingly, THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

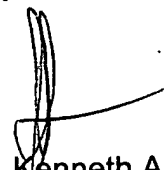
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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth A. Parker whose telephone number is 571-272-2298. The examiner can normally be reached on M-F 10:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kenneth A Parker
Primary Examiner
Art Unit 2871